

# Strengthening the BTWC

The role of the Biological and Toxin Weapons Convention in combating natural and deliberate disease outbreaks

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Public health in reverse; this term has been applied to the deliberate use of microorganisms to cause and spread disease (Harris & Paxman, 1982, p. xii). Biological warfare is not only a perversion of science; it goes against the very heart of human efforts to reduce and eliminate infectious disease as a scourge of society. The developed world had assumed that the impact of natural infectious diseases had been eliminated by, among other things, clean water, antibiotics and vaccinations; we know now that this is far from the truth. Since the early 1970s, at least 30 previously unknown infectious diseases, have been identified for which there is as yet no fully effective treatment (US Department of Health, 2002). One could also be forgiven for believing that the 1972 Biological and Toxin Weapons Convention (BTWC) had eliminated the threat posed by the deliberate release of these microorganisms. Unfortunately, since the convention came into force in 1975, the historical record has been unequivocal. Both the former Soviet Union and Iraq have pursued major clandestine bioweapons programmes concealed both within government and, ostensibly, civil and academic facilities, such as vaccine and other pharmaceutical plants. The misuse of 'dual-use' knowledge, facilities and technologies and the proliferation of potential biological weapons remains a risk, despite the existence of the BTWC, and underscores the need to find more effective ways of combating and deterring the acquisition, possession and use of offensive bioweapon capabilities. We should not forget that the term 'bioweapons' applies to the misuse of microorganisms to cause disease or harm to humans, animals and plants—indeed, the threat to crop monocultures, food supplies and agricultural trade should not be underestimated (Chalk, 2001; Wheelis *et al.*, 2002).

A major stumbling block with the current BTWC is that it contains weak compliance provisions. Article VI of the

convention allows a state to take serious cases of concern to the United Nations Security Council, which would then decide whether to dispatch an investigation team to establish the nature and source of the alleged use. But the veto right of five of its members—China, France, Russia, the UK and the USA—has been a deterrent: in the 27 years of the convention, no compliance concern has ever been taken to the Security Council. Thus, many state parties realized from the outset that the BTWC was not as strong as it could be. There have, therefore, been several attempts to strengthen the convention since the first review conference in 1980, and the UK has tried during these negotiations to include mechanisms to investigate any alleged use of bioweapons. This has been a slow and relatively unproductive process, and last year witnessed the failure of a six-year negotiation to elaborate a protocol to the convention. This would have included provisions for the declaration of certain facilities, visits to those facilities, investigations into cases of suspected cheating, including alleged use and suspicious outbreaks of disease, and provisions for greater scientific and technological co-operation in the life sciences. A new organization would have been established to implement the protocol (BWC/Ad Hoc Group/CRP.8, 2001). In addition, the Fifth Review Conference, which took place last November and December, broke up because of disagreements over the nature of future efforts to strengthen the convention. Nevertheless, it was not all in vain. A range of alternative measures to strengthen

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the BTWC were proposed at a conference by the European Union, the USA and South Africa, and some were included in the draft Final Declaration.

Our response to bioterrorism depends very much on the instruments already in place to counter infectious diseases in general. The BTWC could help to combat existing and emerging diseases, but is it really an appropriate mechanism for such efforts? This article will explain why it has an important role, and why the BTWC needs to be strengthened to be able to do so. Its relevance to infectious disease comes from its basic objective, which is to ensure that microorganisms and toxins are not used as weapons to cause disease, death or other harm—something that is repugnant to the conscience of mankind, as stated in the convention's preamble. Article X of the convention thus obliges State Parties to contribute, individually or with other states or international organizations, to the further development and application of biology to prevent diseases. It is therefore worth taking some time to review other international efforts in the fight against infectious diseases before moving on to the BTWC.

The World Health Organization (WHO) is the principal international organization that combats infectious human diseases and has established various programmes and initiatives to tackle selected aspects. Perhaps the most relevant one in the context of bioterrorism is the Framework for Global Outbreak Alert and Response (WHO, 2002). Its objective is the creation and maintenance of a network to counter disease outbreaks by the rapid identification, verification and communication of threats and to coordinate the resulting response. The Framework also ensures that affected states rapidly obtain the appropriate technical assistance to reduce morbidity and mortality and prevent the further spread of disease. It also contributes to long-term preparedness and capacity building by ensuring

that acute responses lead to longer-term technical assistance. Finally, the Framework constantly evaluates international efforts to contain disease outbreaks.

The WHO further recognizes that the development of diagnostic capabilities for priority diseases is crucial, and that it is essential that the interval between collecting samples to completing laboratory tests is as short as possible. This means improving laboratory capabilities at the global level, especially, but not exclusively, in the developing world. A recent project in the USA on unexplained deaths and critical illnesses that are possibly due to infections, highlighted the substantial limitations of current diagnostic tests for infectious diseases, the need for improvement and the development of novel approaches (Hajjeh *et al.*, 2002).

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The International Health Regulations (IHR) reporting system should also be mentioned here. This is now being revised to make it more appropriate to the control of infectious diseases of international importance as we enter the twenty-first century. There are three objectives: to facilitate epidemic surveillance and control activities at all levels (national, regional and international); to provide clear directions for urgently needed international public health events; and to provide a practical handbook on best practices ([www.who.int/emc/IHR/int\\_regs.html](http://www.who.int/emc/IHR/int_regs.html)). The revised IHR might also define the capacities that are needed to make sure that such emergencies can be detected, evaluated and responded to promptly. These already exist in some states, but many national systems will not be able to achieve the necessary effectiveness by the time the revised regulations are planned to come before the World Health Assembly. The objective is to have a final version available to be submitted for adoption by the World Health Assembly in 2004.

Although the WHO is the main agency for dealing with human disease, other international organizations have similar roles in relation to

animal and plant diseases. The Member States of the Office International des Epizooties (OIE) are politically bound to notify the Office of all outbreaks of certain animal diseases. This commitment is formalized in the International Animal Health Code and in the International Aquatic Animal Health Code (Wheelis, 1999), and there are now 26 notifiable animal diseases: 16 of terrestrial animals and birds, and 10 of aquatic animals. The Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) is another programme, established by the Food and Agricultural Organization (FAO), which encompasses plant pests and diseases—notably plague locusts—as well as those of livestock. To reduce and eventually eliminate the threat posed by animal diseases, EMPRES-Livestock's objective is to assist countries in building their own surveillance and early warning systems, to establish contingency plans and to create a global information system for disease monitoring. It also has a role in research into disease control and eradication. In particular, EMPRES's core objective is to sustain livestock production, enhance food security and facilitate trade in animals and animal products through the effective prevention and progressive control of epidemic diseases. However, it can be argued that the programme is geographically limited and focuses on only a few diseases. There are also no mandatory international reporting systems for plant diseases that are comparable to the reporting of human disease to the WHO or of animal disease to the OIE. However, the International Plant Protection Convention (IPPC) intends to close this gap and secure common and effective action to prevent the spread and introduction of plant and plant-product pests, and to promote control measures (Wheelis, 1999).

Thus, at a quick glance, there seem to be expansive international efforts to counter infectious disease. But that view would be complacent. It is striking that many of the programmes pursued by the WHO, OIE and FAO are similar in their approach, given the emphasis placed on surveillance and diagnosis. However, the surveillance of animal disease under OIE and of plant diseases under the Regional Plant Protection Organizations established under the IPPC is more efficient, comprehensive and rapid than the reporting

of human diseases. What is therefore needed is more interdisciplinary coordination, which was demonstrated by the West Nile Fever outbreak in New York in 1999. Bird deaths were crucial in identifying West Nile virus as the cause of the human disease and in defining its geographical and temporal limits. If, in the future, a surveillance system based on bird deaths is established, it might provide an early warning device for detecting the virus. And this is not limited just to diseases originating in animals. Indeed, it has been pointed out that for the USA, future surveillance for unexplained deaths and critical illnesses that are possibly due to infections might benefit from simplified case-finding methods, improved specimen quality and more focused syndrome-specific surveillance. It is argued that such surveillance approaches will strengthen collaboration between clinicians, laboratorians and public health professionals, leading to better detection of unexplained deaths and critical illnesses, including possible bioterrorism events, and better monitoring of emerging infectious diseases (Hajjeh, 2002).

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And this is where the BTWC enters the picture. Two of the objectives of the doomed protocol's investigative machinery was to deter the use of biological weapons and to provide a more effective way of investigating the nature and source of any disease outbreak, should it occur. One of the main issues during the BTWC protocol negotiations therefore concerned the role of unusual disease outbreaks that are thought to be connected to possible violations of the convention: accidents at bioweapons production facilities, open-air tests or clandestine use of bioweapons. However, many delegations were deeply concerned that the protocol could be misused to make inappropriate imputations about the high incidence of naturally occurring disease outbreaks in their countries, and were reluctant to include such a mechanism. Nevertheless, it has been agreed to include investigations of unusual outbreaks of disease in

the BTWC, although high standards of evidence are required to be submitted in support of an investigation request.

The protocol was not just about investigations: Article 14 outlined a wide range of measures to enhance international scientific and technological cooperation to meet the expectations of many developing countries. One of the key objectives for the developed world was to ensure that measures agreed here did not undermine or duplicate existing efforts. Instead it was essential to focus on genuine gaps and to target areas where greater coordination and effort would be useful; countering infectious disease was one such area, especially because there are gaps and deficiencies in national and international surveillance and detection capabilities. State parties were "to promote and support a range of activities, in furtherance of any current endeavours relevant to and in accordance with the Convention, where appropriate, individually, jointly, through arrangements with relevant international organizations and agencies". Some measures dealing with infectious disease included promotion and support of the work of existing laboratories on the prevention, surveillance, detection and diagnosis of diseases caused by microbial and other biological agents or toxins, in particular infectious diseases. The protocol would also have improved the capabilities of such laboratories and their effectiveness, through—among other things—the provision of training, technical advice, equipment and reagents and would have improved their capabilities in the surveillance, prevention, detection, diagnosis and treatment of diseases as a global effort to monitor emerging and re-emerging diseases in humans, animals and plants. This included the establishment and conduct of training programmes on diagnosis, surveillance, detection, prevention and treatment.

Unfortunately, the realization of these ideas died with the protocol, but developing countries resurrected them in the Fifth BTWC Review Conference and many appear in the draft Final Declaration. But these lack the force of a legally binding instrument. Although the Final Declaration would accord at least some consensual recognition that efforts should continue in these areas, it would be better to find ways of giving these imperatives greater force. This is by no means an easy task.

In the long term, there is a direct relationship between, on the one hand, improved international collaborative efforts on disease surveillance and diagnosis and, on the other, the ability to distinguish natural from man-made outbreaks. Why is this important? In addition to the significant public health benefits for both the developed and developing worlds, improvements in these areas will help the scientific, medical, veterinary and phytosanitary communities to acquire a much better understanding of disease patterns, their epidemiology and natural reservoirs, and also the sociological and economic pressures determining their causes. It might thus become much more difficult for future proliferators or even terrorists to mimic normal phenomena as a cover for a clandestine bioweapon attack, and might help public health officials to distinguish between natural events and bioweapons. Furthermore, regular reporting of disease outbreaks to appropriate international bodies as part of a surveillance and monitoring programme will help in an understanding of global patterns of infectious disease, as well as in building confidence in the recognition of the natural aetiology of reported outbreaks (Federation of American Scientists, 2002). Improved diagnostic capabilities and early warnings would help in identifying outbreaks sooner, which means that prompt treatment could be given and necessary quarantine measures introduced. If an investigation into an unusual outbreak were launched, the investigating team would be better equipped to analyse the situation and make a more rapid determination of the possible origin of the outbreak. This prospect might help to deter the use of bioweapons in the first place, so the global public health community could gain considerably from tying public health tools to security concerns (Ban, 2001, p. 24).

Given the failure of the protocol, which would have established a legal framework for these measures—investigations and improvement in surveillance, detection, diagnosis and prevention of infectious disease—the international community needs to look at alternative ways of furthering the original ideas of the protocol in a different context. Such measures need to be on both national and international levels, because no one state can solve the problems alone. Improving national surveillance and extending the number and capabilities of diagnostic laboratories

are key requirements. Continuing efforts to strengthen the BTWC could act as an impetus for such work and spur greater interdisciplinary efforts, not just at the international level but also at the national level. Much infection still goes unreported or is under-notified, so that today's routine surveillance gives an incomplete picture of the size and nature of a threat. Gaps in surveillance mean that it is impossible to track some major problems properly, and there is no formal coordination of the many separate infectious-disease surveillance systems. Good surveillance is the cornerstone of a system for controlling infectious diseases in the population, in both developed and developing countries. Without it, tracking disease trends, identifying new infectious disease threats, designing effective vaccines, spotting serious outbreaks and monitoring control measures are all impossible (US Department of Health, 2002). It is clear that, for political reasons, the WHO, OIE and FAO cannot be directly involved in investigating unusual outbreaks of infectious disease that are thought to be in violation of the BTWC. Instead, we may need to build on existing UN machinery that was first created to respond to allegations of the use of chemical and biological weapons in Southeast Asia and during the first Gulf War (UN, 1989).

It is an understatement to say that countering infectious disease and reducing the threat of bioweapons are demanding tasks that are not amenable to rapid solutions. Both require sustained effort and commitment of resources, financial as well as human. The BTWC on its own, and any measure that might be agreed upon to strengthen it—such as those outlined here—will not be enough. The BTWC can only provide a framework and focus for greater coordination to close the gaps in existing measures developed by the international community. It is not a substitute. However, there are synergies between efforts to combat infectious disease as a global public health threat and efforts to reduce the likelihood of the use of bioweapons. Improvement in one area—the BTWC—will help progress in the other—the WHO, FAO and OIE—and vice versa.

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